

Appln No. 10/567,882
Amdt date June 9, 2009
Reply to Office action of February 9, 2009

Amendments to the Drawings:

The attached sheet of drawings includes changes to FIG. 2 . This sheet, which includes FIGS. 2 and 3, replaces the original sheet including FIGS. 2 and 3.

Attachment: Replacement Sheet (1)
 Annotated Sheet Showing Changes (1)

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REMARKS/ARGUMENTS

Claims 1-5, 7-12, 14-27, 29-32, and 34-87 are pending in the application, of which claims 38-81 have been withdrawn. Claims 1-2 and 86-87 have been amended.

Applicants' attorney, Saeid Mirsafian, conducted a telephone interview with Examiners Diaz and Ridley on May 26, 2009. Applicants' attorney and the Examiners discussed proposed amendments to overcome the rejection of the claims over Taubmann in view of Hendrick. Applicants' attorney and the Examiners also discussed the use of non-analogous art in rejecting the claims. Applicants' attorney and the Examiners could not reach an agreement. Applicants would like to thank the Examiners for their time and effort devoted to the interview.

The drawings have been objected to under 37 CFR 1.83(a). With respect to the drawings not showing the "indentation" as recited in claim 28, Applicants have canceled claim 28. With respect to the drawings not showing "the threaded spindle" as recited in claim 1, Applicants have amended FIG. 2 to show threading on a portion of the spindle 100. Applicants request withdrawal of the objection to the drawings.

Claim 2 has been objected to for reciting an incomplete phrase. Applicants have amended claim 2 to recite "wherein the tooth depth of the external toothing decreases to zero towards at least one axial end of the spindle nut." Applicants request withdrawal of the objection to claim 2.

Claims 86 and 87 have been rejected for lacking antecedent basis for certain claim terms. Applicants have amended claim 86 to "wherein the at least one element is injection moulded in one-piece on the gear housing." Applicants have also amended claim 87 to depend on claim 1 and recite "wherein a reinforcement ring is mounted on a bearing collar of the spindle nut." Applicants believe that the amendments to claims 86 and 87 overcome the rejection of these claims under 35 U.S.C. 112, second paragraph.

Claims 1-10 and 12 have been rejected under 35 U.S.C. 102(b) over Kraus (2,201,670). Applicants have amended claim 1 to recite "wherein the spindle nut has an opening with an

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internal surface, said internal surface comprising an internal toothing through which the spindle nut interacts with the threaded spindle.” Applicants have canceled claims 6 and 13 and have further amended claim 1 to include the limitations of claims 6 and 13.

Kraus does not teach or suggest “wherein the spindle nut has an opening with an internal surface, said internal surface comprising an internal toothing through which the spindle nut interacts with the threaded spindle.”. Referring to FIG. 1 of Kraus, the gear element 15, which is considered by the Examiner to be a spindle nut, is a worm wheel which interacts with a rack element 16 and a worm 14 via one and the same external toothing. Accordingly, the gear element 15 of Kraus does not have an opening with an internal surface, said internal surface comprising an internal toothing through which the spindle nut interacts with the threaded spindle.

Based on the foregoing, Applicants believe that claims 1-10 and 12 are patentable over Kraus.

Claims 1-8, 12, 13, 15-27, 29-32, 34, 36, 37, 82-87 have been rejected under 35 U.S.C. 103(a) over Taubmann (WO9951456A1; using USP 7,051,986 as a translation of the PCT reference for discussing the rejection) in view of Hendrick (USP 2,128,483).

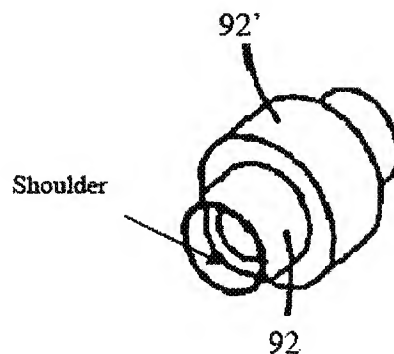
Applicants have amended claim 1 to recite “wherein the spindle nut has an opening with an internal surface, said internal surface comprising an internal toothing through which the spindle nut interacts with the threaded spindle.” Applicants have further amended claim 1 to recite “wherein the internal toothing of the spindle nut interacting with the threaded spindle extends over a greater length in the axial direction than the external toothing of the spindle nut so that the internal toothing extends axially into the at least one end section without external toothing.” Applicants believe that Taubmann and Hendrick do not teach or suggest the noted limitations of claim 1.

Applicants have amended claim 1 to include the limitations of claim 13. Regarding the rejection of claim 13, on page 8 of the Office action, the Examiner states that Taubmann et al. “discloses the internal toothing of the spindle nut (fig. 18, 92; has internal toothing that would extend greater in the axial direction than the external toothing that would be present at 92’.)

associated with the spindle extends over a greater length in the axial direction than the external toothing so that the internal toothing extends axially up into at least one end section.” However, Fig. 18 of Taubmann, does not show a spindle nut 92 but a worm 94, which is described in col. 8, lines 15-24 of Taubmann.

As discussed below, both Taubmann and Hendrick fail to teach or suggest “wherein the internal toothing of the spindle nut interacting with the threaded spindle extends over a greater length in the axial direction than the external toothing of the spindle nut so that the internal toothing extends axially into the at least one end section without external toothing.”

Referring to Fig. 2, Taubmann discloses a spindle nut 92 that has an opening. A magnification of the spindle nut 92 as shown in Fig. 2 of Taubmann is provided below and modified by Applicants to include reference numbers and text. As shown in Fig. 2 of Taubmann, the internal opening does not have a constant diameter, but rather has a shoulder on the inside of the spindle nut. This shoulder indicates that the diameter of the internal opening of the spindle nut is larger at the ends of the spindle nut in the axial direction. Furthermore, this shoulder appears to extend into subpart 92’.



Magnification Fig. 2 of Taubmann (reference signs added)

A similar shoulder is visible also in Fig. 5 of Taubmann. In order for the spindle nut 92 of Taubmann to engage a threaded spindle and for the spindle to extend through the spindle nut, the internal toothing would have to be located axially between the shoulders. Furthermore, one

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of ordinary skill in the art would not modify the spindle nut 92 of Taubmann in order to have internal toothing extending over a greater length so that the internal toothing extends axially into the at least one end section without external toothing, because the extended internal toothing would be incapable of engaging the threaded spindle due to the larger internal diameter of the end regions. Thus, the inner thread of the spindle nut ends at the shoulders without extending into the end regions (i.e., regions with the larger inner diameter) of the spindle nut 92.

Therefore, Taubmann fails to teach or suggest “wherein the internal toothing of the spindle nut interacting with the threaded spindle extends over a greater length in the axial direction than the external toothing of the spindle nut so that the internal toothing extends axially into the at least one end section without external toothing.”

Hendrick does not teach or suggest that the worm wheel 47 has any internal toothing. In addition, one of ordinary skill in the art when modifying Taubmann would use an external toothing extending over the full width of the central part of the spindle nut to allow for a greater force transfer between the worm wheel and the spindle nut. Since the forces to be transferred in gearings such as taught by Taubmann may be large, the person of ordinary skill in the art would not consider to use in the axial direction narrow external toothing as taught by Hendrick, since such narrow toothing would deteriorate the gearing’s ability to transfer large forces. Accordingly, in order to facilitate transfer of large forces, one of ordinary skill in the art would provide the internal thread and the external thread of the spindle nut extending in the axial direction by the same amount rather than the internal toothing extending axially into the at least one end section without external toothing as recited in claim 1.

Because both Taubmann and Hendrick fail to teach or suggest “wherein the internal toothing of the spindle nut interacting with the threaded spindle extends over a greater length in the axial direction than the external toothing of the spindle nut so that the internal toothing extends axially into the at least one end section without external toothing,” Applicants believe that claims 1-8, 12, 13, 15-27, 29-32, 34, 36, 37, 82-87 are patentable over Taubmann in view of Hendrick.

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Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taubmann in view of Hendrick, as applied to claim 1 above, and further in view of Moeller, Jr. (USP 4110054). Because claim 1 is patentable over Taubmann in view of Hendrick, claim 11 is patentable over Taubmann in view of Hendrick and Moeller, Jr.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taubmann in view of Hendrick, as applied to claim 1 above, and further in view of Hauser, Jr. (USP 4386893). Because claim 1 is patentable over Taubmann in view of Hendrick, claim 14 is patentable over Taubmann in view of Hendrick and Hauser, Jr.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taubmann in view of Hendrick, as applied to claim 26 above, and further in view of Segal, (USP 2313776). Because claim 26 is patentable over Taubmann in view of Hendrick, claim 28 is patentable over Taubmann in view of Hendrick and Segal.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taubmann in view of Hendrick, as applied to claim 34 above, and further in view of Muellich (USP 5893959). Because claim 34 is patentable over Taubmann in view of Hendrick, claim 35 is patentable over Taubmann in view of Hendrick and Muellich.

Based on the foregoing, Applicants believe the claims are in condition for allowance.

Respectfully submitted,
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FIG 2

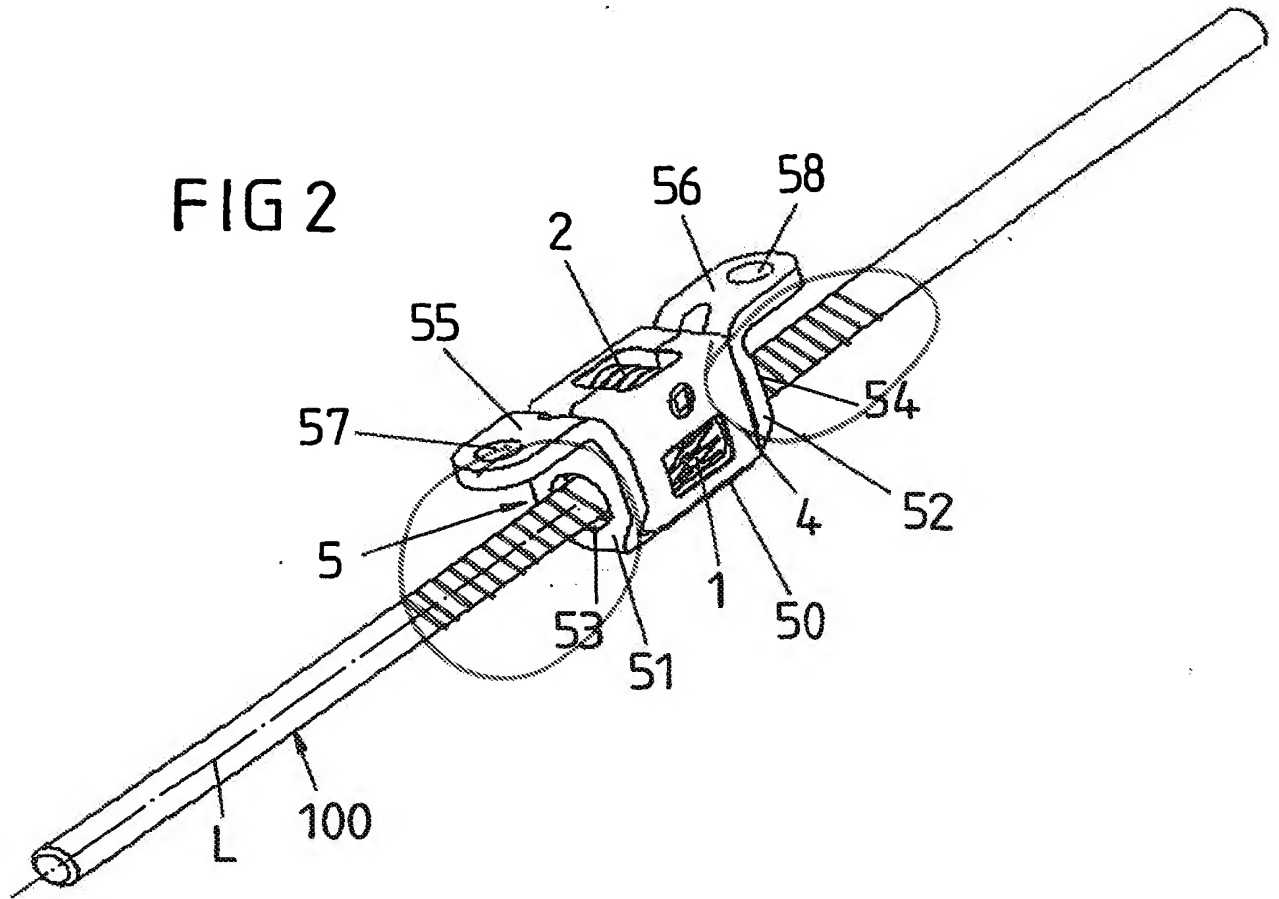


FIG 3

